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## INDUSTRIAL EFFICIENCY.

### THE BEARINGS OF PHYSIOLOGICAL SCIENCE THEREON: A REVIEW OF RECENT WORK.

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One of the most striking features of the present war is the unprecedented use that is being made of science. In all directions one sees the laboratories called upon to direct their past discoveries and their present powers toward the devising of ways in which best to achieve the ends of the warring nations, and the men of the laboratories called upon for experimentation, for counsel, and for the guidance of the various units of the vast forces employed. This is so not only at the front where the multitudinous death-dealing and death-defying devices daily and nightly proclaim the supremacy of science, but back in the hospitals where the dying are saved from death, in the camps where the living are made fit for fighting, in the factories where the instruments of war are being rapidly produced, and even in the homes of the people where training in scientific living is being attempted on a gigantic scale. It seems impossible that this wide recognition of the utilitarian value of science and this eagerness to utilize its achievements shall altogether cease when the horrors have ended and the possibility of peaceful living returns. With the new ways of thinking and of living that are now being learned, mankind will probably continue to demand, and the laboratories will certainly continue to discover, even more efficient ways, and it seems inevitable that science will continue to maintain its proud place among the leading factors of human progress.

Industry has never been backward in accepting and utilizing scientific discoveries. Once they have been shown to be of real value in increasing the output, decreasing the cost, or improving the quality of the product, they are quickly adopted and made a part of industrial processes. Industry does not merely wait for outside contributions, but maintains its own laboratories, often upon a large scale and manned by able men, and thus scientific research has become one of its prominent features. The phenomenal industrial advances of recent decades have been due chiefly to the achievements of two

sciences—mechanical engineering, which has invented and developed automatic machinery, and chemistry, which has discovered new chemical substances and new chemical processes.

But all this great progress in improving industrial work on its physical side has not yet succeeded in eliminating the human being. Men and women are as necessary as ever to the performance of industrial work, however much their occupations may have been changed, and one of the great problems with which industry still has to deal is that of discovering how this human element must be utilized in order to secure its greatest efficiency and obtain from it its greatest value to the employer. Industrial medicine and sanitation have been making marked headway; efficiency engineering, or scientific management, has devised methods that under proper direction have proved valuable; and no one can dispute the fact that these agencies have contributed a considerable share in making the human factor in industrialism more effective. But none has solved the problem, and in recent years it has become gradually clearer that much light can here be derived from physiological science and that a new application of physiological principles—an industrial physiology, if one desires a specific title—has been gradually appearing.

From the standpoint of industrial physiology the industrial worker is looked upon as bringing to the general physical equipment of the factory his own bodily machine, the most intricate of all the machines used in the plant. This machine must be understood, it must be constantly watched, it must be used intelligently, and it must not be abused. Like other industrial machines it can be worked at different speeds, but unlike other industrial machines it can not be worked for an indefinite period, because it is subject to the limitation of fatigue. Fatigue delays work, diminishes output, spoils goods, causes accidents and sickness, keeps workers at home, and in all these ways is an obstacle to efficiency. How fatigue can be kept down to its lowest reasonable limit, how the working power of the individual can be maintained from day to day and from week to week and be made to yield a maximum output without detriment to itself and to others—in other words, how the human machine can be used so as to obtain from it the most profit—constitutes one of the great industrial problems of the day.

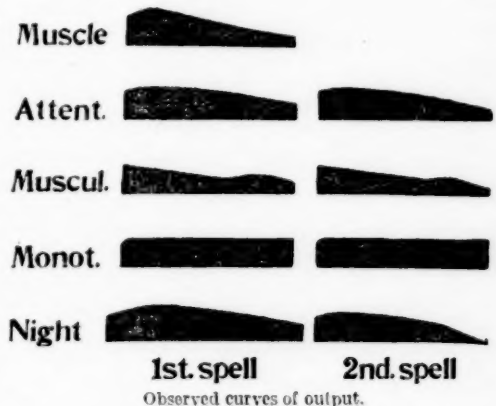
Much light had already been thrown upon the solution of this problem before the war began to make its unprecedented demands on industrialism, but progress has been much more rapid since the fateful month of August of three years ago. Various individual efforts to investigate industrialism from the physiological standpoint have now by common consent centered in Great Britain in the Health of Munition Workers Committee and in America in the Committee on Industrial Fatigue of the Advisory Commission of the Council of National

Defense, associated with the Public Health Service. These two bodies have been actively engaged in studying war industries, and the results of this study, not yet ended, are already beginning to have an important, and will, it is hoped, continue to have a lasting, influence on the industrial work of the world.

The American committee has been making a study of the hourly output of individual workers throughout the working shift. Their observations, which have been carried out under the immediate direction of Mr. P. Sargent Florence, who was formerly connected with the British investigations, when combined with previous results obtained by him and others, show that the course of output follows certain definite lines, which differ in different kinds of occupation and constitute more or less distinct types. These may be represented by typical curves. The study is not yet completed, and the curves so far obtained can not be regarded as necessarily final, nor do they necessarily comprise all possible types. They are therefore presented here as tentative and suggestive.

When in a familiar experiment of the physiological laboratory a single muscle of an animal is stimulated for a considerable period by a regular series of slight electric shocks and is made to contract with each stimulus,

and with each contraction to lift a given load, the work performed in the successive contractions from the beginning to the end may be regarded as a curve which, while differing in details, is perfectly typical of all muscles (see figure). The greatest amount of work is not performed at the beginning of the working period, but the curve at first rises gradually to a maximum, indicating for a time a progressive improvement in working power. This rise is still usually called by the original name given to it, the "treppe," or "staircase." Following the maximum, there is a gradual slow decline in the curve, indicating fatigue, which may continue until the muscle is completely exhausted and totally unable to lift the load. The treppe and the fatigue are typical normal phenomena. This curve of the work of a single muscle may well be kept in mind in considering the curves of output of the industrial worker in a working spell. It should be understood, however, that in the human being the physiological conditions are infinitely more complicated than in a single muscle, for there are added the many other organs of the body whose functions may



Observed curves of output.

possibly modify muscular work, and especially the nervous system, with all its possibilities of wilfully changing an output curve that might otherwise represent genuine capacity. In the output curve of the human being a rise may signify, not an involuntary *treppe*, but a voluntary spurt; and a fall may signify, not real fatigue, but a voluntary restriction of effort. It is not always easy, and it may often prove impossible, to distinguish between the involuntary and the voluntary phenomena.

A curve of output that closely resembles the muscle curve has been found in work that requires close attention and exact muscle coordination. There is at first a gradual rise, continuing through the first hour or two, then a fall gradually increasing throughout the remainder of the working spell. After the luncheon hour the general form of the curve is repeated, but with slight changes in detail. The rise in each spell is often called the "practice effect," although it is analogous to the *treppe* of the muscle curve; the fall, if the work is not voluntarily restricted, is usually interpreted as indicating fatigue. The greater height of the curve just after, as compared with its height just before, the luncheon hour represents the restorative effect of rest and food; and the lower point of the curve at the end of the second, when compared with that at the end of the first spell, signifies the cumulative fatigue of the day.

In occupations that are distinguished especially by their muscular character, the output curve, although more observations are here needed, seems to show progressive fatigue, but the practice effect may be wanting, and a rise followed by a fall, appears in the latter half of the spell. This late rise indicates a temporary inhibition of fatigue, perhaps a second wind; it is less, and fatigue is more, marked in the second spell.

Where work is monotonous and where it is frequently broken by natural pauses, a curve may be obtained which for both working spells is nearly a straight and horizontal line, showing a slight practice effect but no fatigue.

The American committee has found instances of another type of output, in which the figures of the total daily production by the individual from day to day, and even from week to week, show a striking uniformity, and the inference seems to be justified that the workers are not working to their full capacity but, either voluntarily or involuntarily, have fixed upon a certain quantitative output as appropriate to a day's work. No generalized form of curve for such a method of working can yet be presented, but individual curves show usually an early fall with often a marked spurt before the close of the spell. To what degree fatigue enters into the work here is difficult to decide without further study. The frequently pronounced spurt following a decrease in production, is evidently due

to the recognition by the worker that unless he bestirs himself his stint will not be finished by closing-time. The fact that a pronounced spurt is possible indicates that capacity had not before been reached. If work is actually stopped for a portion of the spell for any unusual reason, such as the breakdown of the machinery, there is a rush to accomplish the conventional amount before the end, and this often succeeds. This direct limitation, or, as Florence calls it, "stereotyping" of output, might be expected where wages are paid by the day, but it is found even where piece rates prevail and the worker is free to earn more by doing more. Its cause is probably complex and many elements may enter into it—the unthinking recognition that a certain amount is enough for a day's work; the fear, often justified, that if more is accomplished piece rates will be cut; the disinclination of many rapid workers to surpass their fellows; unwillingness or inability of the foreman to drive until individual capacity is reached; the realization by the foreman that if individual capacity is reached his department will soon exhaust all its available stock; and, last but not least, in many cases just plain human laziness. Overdriving has long been recognized as one of the evils of industrial work, but less attention has been given to underdriving. It seems reasonable that individual capacity should be among the first factors to be considered in determining the standard of output. The prevalence and causes of a maintenance of output on a stereotyped level far below the limit of individual capacity would well repay careful study.

Which, if any, of the various curves of output that have been presented represents the ideal that should always be striven for can not now be stated. Here experiment is needed. Where a genuine fatigue fall in the curve is pronounced, the cessation of work is obviously indicated. This may take the form, as circumstances may indicate, of either an intermediate recess period or the shortening of the hours spent at the factory.

This brings us to one of the most obvious problems of industrial physiology: viz. that of the duration of daily and weekly labor. At the beginning of the war, along with other evidences of the feverish haste which characterized the nation's activities, the duration of labor in the munition factories of Great Britain was greatly increased. Besides lengthening the regular daily schedule, overtime and Sunday labor were frequently resorted to. In America, following the lead of the Council of National Defense, hours that had already been established by custom or law have in general been maintained, and unusually prolonged labor has been avoided in most factories. The result of the long British hours is what might have been predicted, the production of excessive fatigue; in America excessive fatigue seems so far to be less pronounced.



It is widely believed, and especially by employers of labor, that longer hours mean necessarily a greater output. If industrial physiology does nothing else but show the fallacy of this notion, it will have justified itself. A man can of course accomplish more in two hours than in one hour, but it does not follow that he can accomplish more in 15 hours than in 12, or more in 12 than in 10, or even more in 10 than in 8 hours. Here the American Committee has discovered a strikingly suggestive fact in the night work of one of our large munition factories, the duration of the night shift being 12 hours. After 5 a. m. the curve of output shows a rapid decline, and during the last 40 minutes there is very little or absolutely no production. The elimination of the last two hours would be greatly to the advantage of the men and would probably result in no diminution but an actual increase in the total product turned out. Under the British Committee, Vernon has accumulated most striking statistical evidence of the beneficial results of a reduction of the hours of labor. Two instances will suffice to illustrate the point: With a group of 80 to 100 women turning aluminum fuse bodies the reduction of the weekly hours of actual work from 66.2 to 45.6, a saving of more than 20 hours, increased the gross production by 9 per cent. When the actual weekly working hours of 56 men engaged in the very heavy labor of sizing fuse bodies were reduced from 58.2 to 51.2, the gross output was increased by 21 per cent.

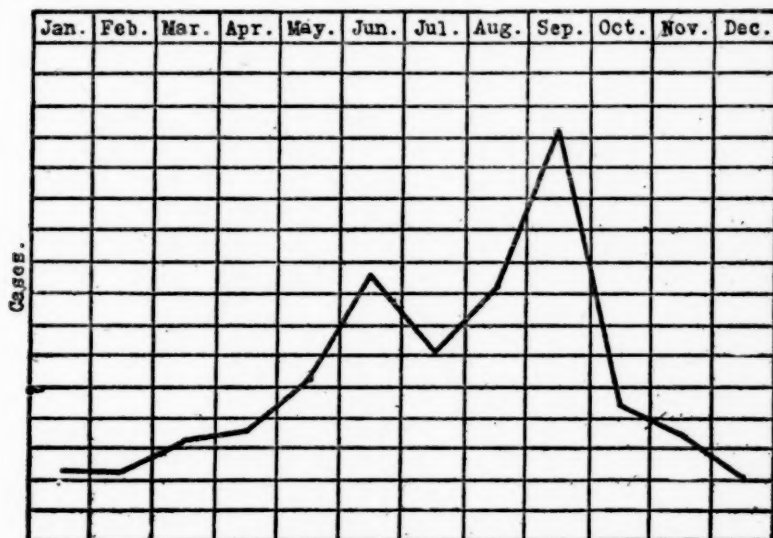
It is impossible in the time here allowed to go further into detail in the bearings of physiological science on industrial efficiency. Industrial physiology tells us, in the interest of a large output, not only to keep the hours of labor down to what experience has shown to be a reasonable limit, but to choose this limit in accordance with the fatiguing effects of the different specific occupations. It tells us to introduce recess periods into long spells, to omit Sunday labor, and to impose overtime on already fatigued workers only in rare emergencies and when compensation can be given by free hours later. It tells us not to keep the same workers continually on the night shift, but to alternate night with day work. It tells us that each worker and each task possesses a specific standard of strength, and it indicates in what task each worker will probably prove most efficient. It tells us that each worker has a rhythm that is best adapted to his own neuromuscular mechanism and that it is advantageous to place in a squad of workers doing a specific task only those possessing similar rhythms, eliminating the faster and the slower individuals, and then to adjust the speed of operation to the common rate. Such instances as these few reveal the scope of industrial physiology and show how it is indicating some of the ways in which the most intricate of all industrial machines, the body of the worker, must be used in order to bring out its greatest usefulness.

Our Government is now rapidly making contracts for war goods of all kinds. Our factories, heretofore engaged largely on foreign orders, are now turning eagerly to the work required to maintain and equip our own forces. Now is the appropriate time to place this work upon a scientific basis and in accord with the principles of industrial physiology. I am sure that if such facts as I have been able only briefly here to present could be understood in all their significance by our producers of war supplies, the end of this latest and most terrible world struggle would be hastened.

### MALARIA IN SOUTH CAROLINA.

#### PREVALENCE AND GEOGRAPHIC DISTRIBUTION, 1915 AND 1916.

The study of the prevalence and geographic distribution of malaria in the State of South Carolina was begun in 1913. Previous reports



Relative prevalence of malaria in South Carolina, by months, as indicated by the number of cases reported.

on this subject were published in the Public Health Reports of March 13, 1914, and May 28, 1915, and issued as reprints Nos. 172 and 277.

The physicians were circularized every three months during the calendar year 1915, and during the first, second, and fourth quarters of the year 1916, reply postal cards being used for the purpose.

Of the cards sent to the physicians, a little more than 12.5 per cent were returned. The number of cards sent out, the number of schedules returned, and the number of counties represented at each circularization are shown in Table 1.

It is to be borne in mind that the number of cases reported by the physicians does not show the cases that actually occurred, for an average of less than 13 per cent of the physicians returned the schedules. While there must have been many more cases of malaria in the State, the reports of the physicians on which this study is based are sufficient to show whether malaria was present or absent in the several counties, and reasonably accurately the relative intensity of the infection in the counties.

The cases reported throughout the State by months are shown in Table 2. The relative numbers of cases reported by months are shown in the chart.



Relative prevalence of malaria in South Carolina by counties in proportion to the population, as indicated by the number of cases reported.

The numbers of cases reported from the several counties of the State are given by race and year in Table 3.

The map above shows the relative prevalence of the disease in the several counties of the State, the heavier shaded counties being those in which the infection was heaviest, the unshaded counties those in which the infection was lightest, as indicated by the numbers of cases reported. The relative intensity of infection was determined by ascertaining the number of cases reported in each county during the period January 1, 1915, to June 30, 1916, and October 1, 1916, to December 31, 1916, inclusive, per 1,000 population. The population used was that of the 1910 census, it being impracticable to use current estimates for the purpose.



TABLE 1.—Results of circularization of practicing physicians.

Period.	Inquiry cards sent to physicians.	Replies received.	Percentage of replies.	Counties represented in replies.	Counties not heard from.	Cases of malaria reported.
1915.						
January to March.....	3,825	611	15.97	43	1	763
April to June.....	1,275	131	10.27	36	8	1,732
July to September.....	1,275	166	13.02	35	9	2,743
October to December.....	1,275	137	10.75	35	9	1,004
1916.						
January to March.....	1,275	125	9.80	35	9	457
April to June.....	1,275	143	11.22	34	10	988
October to December.....	1,275	131	10.27	35	9	947

TABLE 2.—Cases of malaria reported by months.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1915.....	221	217	325	361	512	859	607	816	1,320	441	356	207
1916.....	102	121	234	197	290	501	.....	.....	.....	420	333	194

TABLE 3.—Cases reported by counties, by years, and by color.

County.	Calendar year 1915.			Jan. 1 to June 30 and Oct. 1 to Dec. 31, 1916.		
	White.	Colored.	Combined.	White.	Colored.	Combined.
Abbeville.....	80	72	152	.....	2	2
Adair.....	34	60	94	15	7	22
Anderson.....	14	7	21	14	9	23
Bamberg.....	6	6	12	.....	.....	.....
Barnwell.....	122	133	255	8	12	20
Beaufort.....	46	45	91	3	10	13
Berkley.....	55	77	132	.....	.....	.....
Calhoun.....	63	92	155	25	50	75
Charleston.....	21	47	68	63	73	136
Cherokee.....	13	16	29	1	.....	1
Chester.....	145	138	283	62	77	139
Chesterfield.....	21	15	36	19	7	26
Clarendon.....	26	14	40	29	41	70
Clinton.....	16	10	26	.....	.....	.....
Darlington.....	62	73	135	33	69	102
Dillon.....	14	20	34	.....	.....	.....
Dorchester.....	25	30	55	80	23	103
Edgefield.....	12	42	54	8	15	23
Fairfield.....	164	206	370	54	75	129
Florence.....	21	57	78	8	43	51
Georgetown.....	59	166	165	34	61	95
Greenville.....	31	29	60	1	.....	1
Greenwood.....	16	20	36	8	5	13
Hampton.....	2	4	6	42	66	108
Horry.....	6	1	7	16	17	33
Kershaw.....	88	50	138	19	15	34
Lancaster.....	53	77	130	1	.....	1
Laurens.....	61	32	93	12	6	18
Lee.....	8	12	20	18	11	29
Lexington.....	118	61	179	63	18	81
Marion.....	189	251	440	27	30	57
Marlboro.....	26	33	59	20	23	43
Newberry.....	524	591	1,115	12	14	26
Oconee.....	2	.....	2	2	.....	2
Orangeburg.....	393	399	792	283	192	475
Pickens.....	4	.....	4	.....	.....	.....
Richland.....	204	225	429	61	116	177
Saluda.....	3	4	7	6	12	18
Spartanburg.....	63	14	77	88	19	107
Sumter.....	5	8	13	.....	36	36
Union.....	51	7	58	2	2	4
Williamsburg.....	40	79	119	6	6	12
York.....	124	49	173	55	32	87
Total.....	3,030	3,212	6,242	1,198	1,194	2,392

Five cases of hemoglobinuric fever were reported from Orangeburg County during the fourth quarter of 1916.

## PREVALENCE OF DISEASE.

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring.*

### UNITED STATES.

#### EXTRA-CANTONMENT ZONES—CASES REPORTED WEEK ENDED JAN. 8.

*Camp Beauregard, La.*—City of Alexandria: Meningitis 5, pneumonia 2, measles 41, diphtheria 3, gonorrhea 1, German measles 2. Pineville: Meningitis 2, measles 11. City of Boyce: Measles 13. Village of Tioga: Meningitis 1, measles 2. Rural districts of Rapides Parish: Measles 12, broncho-pneumonia 1, lobar pneumonia 1, mumps 1. The village of Moreauville, 30 miles from Alexandria, reports 6 cases meningitis, all of cases in one family; onset first case December 29, second case January 3; other 4 cases all had onset within four days of the onset second case.

*Camp Bowie, Tex.*—Fort Worth: Measles 2, mumps 1, smallpox 2, pneumonia 2.

*Camp Dodge, Iowa.*—Des Moines: Smallpox 31, scarlet fever 8, diphtheria 3, tuberculosis 1, measles 4. Polk City: Measles 1. Urbandale: Scarlet fever 1. Bloomfield Township: Diphtheria 1.

*Camp Funston, Kans.*—Measles 5, smallpox 1, Riley; measles 1, Randolph; measles 95, pneumonia 2, diphtheria 2—1 death, chicken pox 1, scarlet fever 1, meningitis 1 whooping cough 1, Manhattan; chicken pox 1, measles 1, Keats; scarlet fever 1, measles 4, chicken pox 1, Ogden; meningitis carriers, delayed reports 11. Chicken pox 2, scarlet fever 2, measles 17, smallpox 1, diphtheria 1, Junction City.

*Camp Gordon, Ga.*—Atlanta: Chicken pox 2, diphtheria 11, German measles 2, gonococcus infection 24, measles 17, cerebrospinal meningitis 1, scarlet fever 3, smallpox 1, syphilis 10, typhoid fever 1. Decatur: German measles 3, mumps 2. Stone Mountain: Measles 1.

*Camp Greene, N. C.*—Chancroids 3, syphilis 11, measles 22, German measles 6, syphilis and gonorrhea 1, whooping cough 10, gonorrhea 4, scarlet fever 1, typhoid fever 1, Charlotte Township.

*Camp Hancock, Ga.*—Measles: Augusta 29, Gracewood 3, Hepzibah 5, Blythe 2, Davidson Crossing 1; chicken pox, Augusta 4; cerebrospinal meningitis, Augusta 1; German measles, Augusta 1; typhoid fever, Augusta 1; scarlet fever, Augusta 1.

*Camp Jackson, S. C.*—(Week ended Jan. 5.) Columbia: Roseola 10, measles 9, chicken pox 1, smallpox 2, typhoid 1, diphtheria 1.

*Fort Leavenworth, Kans.*—Measles: City 8, county 2. Whooping cough: City 4, county 2. Tuberculosis: City 2. Lobar pneumonia: City 3, county 3. Chicken pox: City 5, county 2. German measles: City 5. Smallpox: City 1, county 4.

*Camp Lewis, Wash.*—German measles: Dupont 10 cases, Spanway 2 cases, Park Lodge 2 cases.

*Camp Logan, Tex.*—Chicken pox: 6 Houston. Diphtheria: 2 Houston. German measles: 20 Houston, 1 Houston Heights. Gonorrhea: 1 Houston. Measles: 27 Hous-

ton. Mumps: 1 Houston. Malaria: 1 Houston. Pneumonia: 5 Houston. Syphilis: 1 Houston. Tuberculosis: 5 Houston. Whooping cough: 1 Houston.

*Camp MacArthur, Tex.*—Waco: Chicken pox 4, German measles 7, gonococcus 1, malaria 1, measles 5, mumps 1, lobar pneumonia 1, scarlet fever 2, smallpox 1, syphilis 2, tuberculosis 1, typhoid 2, whooping cough 1. County: None.

*Camp McClellan, Ala.*—Anniston: Smallpox 6, diphtheria 3, chicken pox 20, measles 19. Oxford: Smallpox 2. Jacksonville: Chicken pox 1.

*Fort Oglethorpe, Ga.*—Chattanooga: Scarlet fever 2, German measles 9, measles 24, mumps 3, paratyphoid 2, chicken pox 3, meningitis 1, tuberculosis 2, pneumonia 4, syphilis 1. Eastlake: Measles 4, meningitis 1, typhoid fever 1, pneumonia 1, German measles 2. Fort Cheatham: Pneumonia 1. St. Elmo: German measles 1. Rossville, Ga.: Measles 2, pneumonia 1. Lytle, Ga.: Smallpox 1.

*Camp Pike, Ark.*—Little Rock: Measles 39, chicken pox 7, smallpox 26, scarlet fever 4, tuberculosis —, lobar pneumonia 4, German measles 15, mumps 1, malaria 1, syphilis 9, gonorrhea 20, chancre 5, meningitis 3. North Little Rock: Measles 5, smallpox 10, pneumonia 2, German measles 9, malaria 1, syphilis 1, meningitis 2, typhoid 1, whooping cough 1. Scotts: Gonorrhea 1. Pinnacle: Measles 1. Roland: Measles 2, diphtheria 1, smallpox 1. Wynne: Measles 1. Sweethome: Pneumonia 1. Levy: Smallpox 1.

*Camp Sevier, S. C.*—Mills Mill: 1 measles.

*Camp Shelby, Miss.*—Hattiesburg: Chicken pox 2, gonorrhea 4, hookworm 2, malaria 3, measles 3, German measles 5, mumps 2, pneumonia 1, smallpox 4. Saucier, Harrison County: Diphtheria 1. Biloxi, Harrison County: Diphtheria 1. McLaurin, Forrest County: Smallpox 1. Columbia, Marion County: Smallpox 1. Gulfport, Harrison County: Meningitis 1. Long Beach, Harrison County: Meningitis 1. Laurel, Jones County: Tuberculosis, pulmonary, 1. Mosells, Jones County: Tuberculosis, pulmonary, 3.

*Camp Sheridan, Ala.*—Montgomery: German measles 22, measles 23, smallpox 12, cerebrospinal meningitis suspect 1, diphtheria 1, chicken pox 3, scarlet fever 1, tuberculosis 1. Rural district in 5-mile zone: Measles 1, smallpox 3, chicken pox 1. Capitol Heights: German measles 1, measles 1. Cloverdale: Measles 1.

*Camp Sherman, Ohio.*—Chicken pox: Springfield Township 7, Kingston 1. German measles: Chillicothe 9. Gonorrhea: Chillicothe 1. Measles: Chillicothe 16. Scarlet fever: Chillicothe 1, Taint Township 1, Liberty Township 1. Smallpox: Jefferson Township 1. Whooping cough: Springfield Township 6.

*Camp Zachary Taylor, Ky.*—Jefferson County: Gonococcus infection 1, measles 1, rabies in animal 1, scarlet fever 1, pulmonary tuberculosis 1. Louisville: Chicken pox 3, diphtheria 6, cerebrospinal meningitis 1, German measles 9, measles 17, scarlet fever 7, tuberculosis, pulmonary, 7, smallpox 1, typhoid fever 2, whooping cough 7.

*Tidewater health district, Va.*—Newport News: Measles 20, chicken pox 5, lobar pneumonia 1, German measles 2, cerebrospinal meningitis 1. Hampton: Whooping cough 3, lobar pneumonia 2, diphtheria 1, measles 1. Phoebus: Chickenpox 1, whooping cough 5.

*Camp Wadsworth, S. C.*—Spartanburg city: German measles 22, diphtheria 1, measles 3, chicken pox 4, tuberculosis 3, whooping cough 4, scarlet fever 1, cerebrospinal meningitis 2. Pauline: Typhoid fever 1, pneumonia 1. East Spartanburg: Scarlet fever 1. Whitney: Scarlet fever 1.

## CURRENT STATE SUMMARIES.

### Alabama.

From Collaborating Epidemiologist Perry, telegram dated January 8, 1918:

One fatal case cerebrospinal meningitis at Silas, Choctaw County.

**California.**

From the State Board of Health of California, telegram dated January 8, 1918:

Nearly all reportable diseases show increase last week. Eight epidemic cerebrospinal meningitis—2 San Francisco, 2 Los Angeles, and 1 each San Jose, Orange County, Lindsay, and Ontario; 6 smallpox—2 each Los Angeles city and Imperial County, 1 each Shasta County and Grass Valley. Outbreaks of measles in San Diego city, Hanford, and Visalia. Extensive outbreak chickenpox in Stockton.

Reported by mail for the preceding week (ending Dec. 29):

Cerebrospinal meningitis.....	4	Pneumonia.....	98
Chicken pox.....	67	Poliomyelitis.....	1
Diphtheria.....	71	Ophthalmia neonatorum.....	1
Erysipelas.....	10	Scarlet fever.....	57
German measles.....	57	Smallpox.....	6
Gonococcus infection.....	28	Syphilis.....	120
Malaria.....	2	Trachoma.....	1
Measles.....	175	Tuberculosis.....	155
Mumps.....	22	Typhoid fever.....	19
Pellagra.....	1	Whooping cough.....	19

**Indiana.**

From the State Board of Health of Indiana, telegram dated January 7, 1918:

Scarlet fever: Epidemic Winchester, school closed; Nevada, and Jackson Township, Steuben County; Pike Township, Jay County. Diphtheria deaths: One Nashville, Brown County, 1 Rushville, 1 Berne, Adams County. Smallpox: Epidemic Paragon, Morgan County, and Geneva, Adams County. Epidemic measles school children Frankfort.

**Kansas.**

From Collaborating Epidemiologist Crumbine, telegram dated January 7, 1918:

Epidemic meningitis: Manhattan 1, Lincoln 1, Topeka 1, Richland 1, Wichita 1. Meningococcus carriers: Junction City 11. Smallpox: Kansas City, Kans., 45.

**Massachusetts.**

From Collaborating Epidemiologist Kelley, telegram dated January 7, 1918:

Unusual prevalence: Diphtheria, Amesbury 3, additional; measles, Braintree 49, additional; typhoid, North Brookfield 2, additional.

**Minnesota.**

From Collaborating Epidemiologist Bracken, telegram dated January 7, 1918:

Smallpox: Cook County, Rosebush Township 1; Millelacs County, Borgholm Township 1; Mower County, Windom Township 3; Pope County, Lowry village 1; Stearns County, Ashley Township 1; Wright County, Frankfort Township 1. Two cases of poliomyelitis and 2 cases of cerebrospinal meningitis reported since December 31.

## Washington.

From Collaborating Epidemiologist Tuttle, telegram dated January 7, 1918:

Five cases typhoid Waitsburg, Walla Walla County. No outbreaks.

## CEREBROSPINAL MENINGITIS.

## State Reports for November, 1917.

Place.	New cases reported.	Place.	New cases reported.
Alabama:		Alabama—Continued.	
Caldoun County.....	2	Montgomery County.....	2
Jefferson County.....	1	Total.....	6
	1	District of Columbia.....	2

## City Reports for Week Ended Dec. 22, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Augusta, Ga.....	1	1	Los Angeles, Cal.....	1	1
Baltimore, Md.....	1	2	Louisville, Ky.....	1	1
Boston, N. H.....	1	1	Lowell, Mass.....	1	1
Boston, Mass.....	2	1	Milwaukee, Wis.....	2	1
Buffalo, N. Y.....	2	1	Minnapolis, Minn.....	1	1
Chicago, Ill.....	4	4	Newark, N. J.....	1	1
Cincinnati, Ohio.....	1	1	New York, N. Y.....	3	5
Cleveland, Ohio.....	1	1	Omaha, Neb.....	1	1
Columbia, S. C.....	2	1	Orange, N. J.....	1	1
Dayton, Ohio.....	1	1	Petersburg, Va.....	1	1
Denver, Colo.....	1	1	Philadelphia, Pa.....	1	1
Des Moines, Iowa.....	1	1	Pittsburg, Pa.....	2	1
Detroit, Mich.....	1	1	Providence, R. I.....	1	1
Dubuque, Iowa.....	1	1	St. Louis, Mo.....	2	1
Last Orange, N. J.....	1	1	San Francisco, Cal.....	1	1
Kansas City, Mo.....	4	1	Waltham, Mass.....	1	1

## DIPHTHERIA.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 46.

## ERYSIPELAS.

## City Reports for Week Ended Dec. 22, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Baltimore, Md.....	1	2	New York, N. Y.....	3	3
Buffalo, N. Y.....	1	1	Oakland, Cal.....	1	1
Chicago, Ill.....	13	2	Philadelphia, Pa.....	1	1
Cincinnati, Ohio.....	2	1	Pittsburgh, Pa.....	4	1
Cleveland, Ohio.....	3	1	Portland, Oreg.....	1	1
Denver, Colo.....	6	1	Racine, Wis.....	1	1
Detroit, Mich.....	2	1	Rochester, N. Y.....	2	1
Duluth, Minn.....	1	1	Rutland, Vt.....	1	1
Erie, Pa.....	1	1	Sacramento, Cal.....	1	1
Grand Rapids, Mich.....	1	1	Saginaw, Mich.....	1	1
Kalamazoo, Mich.....	2	1	St. Joseph.....	1	1
Los Angeles, Cal.....	2	1	St. Louis, Mo.....	8	3
Louisville, Ky.....	1	1	Schenectady, N. Y.....	1	1
Milwaukee, Wis.....	4	1	Springfield, Ill.....	2	1
Montclair, N. J.....	1	1	Toledo, Ohio.....	1	1
Newark, N. J.....	8	1	Washington, Pa.....	1	1



## LEPROSY.

## City Report for Week Ended Dec. 22, 1917.

During the week ended December 22, 1917, one case of leprosy was reported in Cambridge, Mass.

## MALARIA.

## Alabama Report for November, 1917.

Place.	New cases reported.	Place.	New cases reported.
Alabama:		Alabama—Continued.	
Barbour County.....	1	Houston County.....	15
Blount County.....	6	Jefferson County.....	22
Bullock County.....	5	Madison County.....	4
Butler County.....	2	Mobile County.....	5
Calhoun County.....	3	Montgomery County.....	14
Clarke County.....	1	Pickens County.....	1
Cleburne County.....	4	Pike County.....	1
Coffee County.....	1	Shelby County.....	5
Dallas County.....	5	Talladega County.....	2
Elmore County.....	1	Washington County.....	1
Franklin County.....	3	Wilcox County.....	1
Geneva County.....	1		
Greene County.....	3	Total.....	107

## City Reports for Week Ended Dec. 22, 1917.

Place.	Cases.	Deaths.	Places.	Cases.	Deaths.
Alexandria, La.....	2	.....	Memphis, Tenn.....	.....	1
Birmingham, Ala.....	1	.....	Newark, N. J.....	1	.....
Little Rock, Ark.....	1	.....	New Orleans, La.....	1	1

## MEASLES.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 46.

## PELLAGRA.

## State Reports for November, 1917.

Place.	New cases reported.	Place.	New cases reported.
Alabama:		Alabama—Continued.	
Autauga County.....	1	Limestone County.....	1
Calhoun County.....	1	Macon County.....	1
Chambers County.....	2	Madison County.....	1
Clarke County.....	3	Monroe County.....	1
Coffee County.....	1	Montgomery County.....	3
Covington County.....	1	Morgan County.....	3
Dallas County.....	1	Perry County.....	3
DeKalb County.....	3	Pike County.....	2
Escambia County.....	1	St. Clair County.....	2
Etowah County.....	3	Sumter County.....	1
Fayette County.....	1	Tallapoosa County.....	1
Hale County.....	2	Tuscaloosa County.....	10
Houston County.....	1	Washington County.....	1
Jackson County.....	1	Winston County.....	2
Jefferson County.....	25		
Lamar County.....	1	Total.....	82
Lauderdale County.....	1		
Lawrence County.....	1	District of Columbia.....	4

## PELLAGRA—Continued.

## City Reports for Week Ended Dec. 22, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Atlanta, Ga.....	1	1	Lynchburg, Va.....	1	1
Augusta, Ga.....	1	1	Memphis, Tenn.....	1	1
Birmingham, Ala.....	1	1	Mobile, Ala.....	1	2
Charleston, S. C.....	1	1	Montgomery, Ala.....	1	1
Greenville, S. C.....	1	1	Savannah, Ga.....	1	1

## PNEUMONIA.

## City Reports for Week Ended Dec. 22, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Alton, Ill.....	1	1	Lincoln, Nebr.....	3	2
Baltimore, Md.....	14	24	Lorain, Ohio.....	1	1
Binghamton, N. Y.....	4	1	Los Angeles, Cal.....	29	15
Boston, Mass.....	33	16	Manchester, N. H.....	3	3
Braddock, Pa.....	2	1	Morristown, N. J.....	1	1
Brookton, Mass.....	2	1	Newark, N. J.....	58	10
Brookline, Mass.....	2	2	New Bedford, Mass.....	4	3
Buffalo, N. Y.....	6	10	Newburyport, Mass.....	1	1
Cambridge, Mass.....	1	1	New Castle, Pa.....	2	1
Chattanooga, Tenn.....	7	1	Newport, Ky.....	1	1
Chelsea, Mass.....	4	4	Newport, R. I.....	1	1
Chicago, Ill.....	122	84	Newton, Mass.....	6	2
Chillicothe, Ohio.....	1	1	Petersburg, Va.....	10	2
Cleveland, Ohio.....	53	39	Philadelphia, Pa.....	128	79
Dayton, Ohio.....	12	12	Pittsburgh, Pa.....	53	47
Detroit, Mich.....	16	33	Pontiac, Mich.....	2	1
Erie, Pa.....	4	4	Quincy, Mass.....	1	2
Fall River, Mass.....	4	1	Reading, Pa.....	3	1
Fitchburg, Mass.....	5	1	Rochester, N. Y.....	17	7
Flint, Mich.....	2	3	Sacramento, Cal.....	8	6
Grand Rapids, Mich.....	2	1	Saginaw, Mich.....	1	1
Harrison, N. J.....	1	1	St. Joseph, Mo.....	2	2
Hattiesburg, Miss.....	2	1	San Diego, Cal.....	4	1
Haverhill, Mass.....	7	1	San Francisco, Cal.....	11	14
Jackson, Mich.....	1	3	Schenectady, N. Y.....	1	1
Kalamazoo, Mich.....	3	4	Somerville, Mass.....	1	1
Kansas City, Mo.....	6	20	Springfield, Mass.....	2	2
Lancaster, Pa.....	2	1	Toledo, Ohio.....	1	2
Leavenworth, Kans.....	1	1	Wichita, Kans.....	5	2
Lexington, Ky.....	2	2	Worcester, Mass.....	9	1

## POLIOMYELITIS (INFANTILE PARALYSIS).

## Alabama Report for November, 1917.

During the month of November, 1917, cases of poliomyelitis were notified in Alabama as follows: One each in Dekalb and Jackson Counties.

## City Reports for Week Ended Dec. 22, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Brockton, Mass.....	1	1	Milwaukee, Wis.....	1	1
Chicago, Ill.....	1	1	Pittsburgh, Pa.....	1	1
Harrisburg, Pa.....	5	1			

## SCARLET FEVER.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 46.

## SMALLPOX.

## Miscellaneous State Reports.

Place.	New cases reported.	Place.	New cases reported.
Alabama (Nov. 1-30):		Alabama (Nov. 1-30)—Continued.	
Bibb County.....	1	Pickens County.....	6
Calhoun County.....	14	Shelby County.....	5
Elmore County.....	1	Talladega County.....	4
Etowah County.....	3	Total.....	44
Jefferson County.....	1	District of Columbia (Nov. 1-30).....	3
Lamar County.....	8		
Madison County.....	1		

## City Reports for Week Ended Dec. 22, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Alton, Ill.....	5		Kenosha, Wis.....	1	
Ann Arbor, Mich.....	2		Knoxville, Tenn.....	1	
Atlanta, Ga.....	1		La Crosse, Wis.....	13	
Baltimore, Md.....	1		Leavenworth, Kans.....	1	
Braddock, Pa.....	1		Lincoln, Nebr.....	4	
Brookline, Mass.....	1		Little Rock, Ark.....	19	
Buffalo, N. Y.....	1		Los Angeles, Cal.....	2	
Butte, Mont.....	17		Louisville, Ky.....	1	
Canton, Ohio.....	6		Memphis, Tenn.....	3	
Chicago, Ill.....	6		Milwaukee, Wis.....	6	
Chillicothe, Ohio.....	1		Minneapolis, Minn.....	24	
Cincinnati, Ohio.....	9		Montgomery, Ala.....	6	
Cleveland, Ohio.....	27		New Orleans, La.....	4	
Columbia, S. C.....	1		Niagara Falls, N. Y.....	2	
Columbus, Ohio.....	3		North Little Rock, Ark.....	2	
Dayton, Ohio.....	1		Oklahoma City, Okla.....	6	
Denver, Colo.....	7		Omaha, Nebr.....	13	
Des Moines, Iowa.....	20		Pittsburgh, Pa.....	4	
Detroit, Mich.....	85		Portland, Oreg.....	3	
Dubuque, Iowa.....	2		Rockford, Ill.....	1	
Duluth, Minn.....	1		St. Joseph, Mo.....	5	
Evansville, Ind.....	7		St. Louis, Mo.....	13	
Flint, Mich.....	14		Salt Lake City, Utah.....	8	
Ft. Wayne, Ind.....	11		San Francisco, Cal.....	1	
Ft. Worth, Tex.....	5		Sioux City, Iowa.....	7	
Grand Rapids, Mich.....	41		Springfield, Mass.....	1	
Harrisburg, Pa.....	2		Superior, Wis.....	1	
Indianapolis, Ind.....	14		Wheeling, W. Va.....	2	
Kansas City, Kans.....	40		Wichita, Kans.....	2	
Kansas City, Mo.....	147				

## TETANUS.

## City Reports for Week Ended Dec. 22, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Baltimore, Md.....	1	1	Norristown, Pa.....	1	1
Chicago, Ill.....	1	1	Philadelphia, Pa.....	1	1
Lawrence, Mass.....	1	1	Syracuse, N. Y.....	1	1

## TUBERCULOSIS.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 46.

## TYPHOID FEVER.

## State Reports for November, 1917.

Place.	New cases reported.	Place.	New cases reported.
Alabama:		Alabama—Continued.	
Baldwin County.....	1	Lamar County.....	2
Barbour County.....	1	Lauderdale County.....	2
Bibb County.....	3	Lee County.....	1
Blount County.....	1	Limestone County.....	1
Bullock County.....	2	Lowndes County.....	1
Butler County.....	1	Madison County.....	30
Calhoun County.....	13	Marion County.....	1
Chambers County.....	2	Marshall County.....	2
Choctaw County.....	2	Mobile County.....	7
Clarke County.....	1	Monroe County.....	1
Coffee County.....	3	Montgomery County.....	14
Colbert County.....	1	Morgan County.....	2
Coosa County.....	5	Pike County.....	3
Covington County.....	2	Shelby County.....	1
Cullman County.....	1	Sumter County.....	2
Dallas County.....	3	Talladega County.....	2
DeKalb County.....	1	Tallapoosa County.....	3
Elmore County.....	10	Tuscaloosa County.....	7
Etowah County.....	2	Walker County.....	11
Fayette County.....	2	Winston County.....	3
Greene County.....	1		
Hale County.....	2	Total.....	235
Houston County.....	1		
Jackson County.....	1	District of Columbia.....	32
Jefferson County.....	77		

## City Reports for Week Ended Dec. 22, 1917.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Alton, Ill.....	1		New Bedford, Mass.....	3	
Atlanta, Ga.....		1	New Castle, Pa.....	2	
Atlantic City, N. J.....	1		New Orleans, La.....	8	2
Baltimore, Md.....	5	2	New York, N. Y.....	10	2
Birmingham, Ala.....	3		Omaha, Nebr.....		1
Boston, Mass.....	3	1	Philadelphia, Pa.....	2	1
Buffalo, N. Y.....	2	1	Pittsburgh, Pa.....	3	
Chicago, Ill.....	4	1	Portland, Ore.....		1
Cincinnati, Ohio.....	1		Providence, R. I.....	1	1
Cleveland, Ohio.....	1	2	Rochester, N. Y.....	2	
Davenport, Iowa.....	1		Rockford, Ill.....	1	
Denver, Colo.....		1	Sacramento, Cal.....		1
Detroit, Mich.....	2	2	Saginaw, Mich.....	1	
Duluth, Minn.....	1		St. Louis, Mo.....	1	2
Fall River, Mass.....	1	1	Salt Lake City, Utah.....	2	
Flint, Mich.....		1	Sandusky, Ohio.....	2	
Fort Worth, Tex.....		1	San Francisco, Cal.....	5	
Green Bay, Wis.....	2		Savannah, Ga.....		1
Indianapolis, Ind.....	2		Schenectady, N. Y.....	1	
Kokomo, Ind.....	2	1	Somerville, Mass.....	1	
Lawrence, Mass.....	4		South Bend, Ind.....		1
Lincoln, Nebr.....	1		Springfield, Ill.....	1	
Los Angeles, Cal.....	1	1	Springfield, Mass.....	1	
Louisville, Ky.....	2		Trenton, N. J.....	1	
Memphis, Tenn.....	1		Troy, N. Y.....	3	1
Milwaukee, Wis.....	1		Waltham, Mass.....	1	
Minneapolis, Minn.....	9		Washington, Pa.....	1	
Morristown, N. J.....	1		Wheeling, W. Va.....	2	
Nashville, Tenn.....	2		Wilmington, Del.....	2	1
Newark, N. J.....	4	1	Worcester, Mass.....	4	

## TYPHUS FEVER.

## City Report for Week Ended Dec. 22, 1917.

During the week ended December 22, 1917, one case of typhus fever was reported in New York City.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

## State Reports for November, 1917.

During the month of November, 1917, 107 cases of diphtheria, 407 cases of measles, and 139 cases of scarlet fever were notified in the State of Alabama; and 263 cases of diphtheria, 208 cases of measles, and 70 cases of scarlet fever were notified in the District of Columbia.

## City Reports for Week Ended Dec. 22, 1917.

City.	Population as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.		
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Over 500,000 inhabitants:											
Baltimore, Md.	589,621	254	26	1	22	1	15	—	48	28	
Boston, Mass.	756,476	235	118	5	85	2	47	—	52	23	
Chicago, Ill.	2,497,722	700	223	14	46	1	100	1	355	87	
Cleveland, Ohio.	671,073	190	50	—	11	—	8	—	35	22	
Detroit, Mich.	571,781	216	62	8	16	2	39	1	20	11	
Los Angeles, Cal.	503,812	175	14	—	13	—	12	—	49	40	
New York, N. Y.	5,602,841	1,612	249	26	782	11	158	2	270	151	
Philadelphia, Pa.	1,704,518	630	55	8	56	—	55	1	104	65	
Pittsburgh, Pa.	579,690	216	29	1	113	1	9	1	26	13	
St. Louis, Mo.	757,309	249	102	3	14	—	22	—	26	20	
From 300,000 to 500,000 inhabitants:											
Buffalo, N. Y.	468,558	147	18	2	17	—	8	—	22	25	
Cincinnati, Ohio.	410,476	147	23	2	8	—	14	1	22	20	
Jersey City, N. J.	376,335	—	9	—	56	—	14	—	11	—	
Milwaukee, Wis.	431,535	80	10	2	55	—	49	1	14	4	
Minneapolis, Minn.	363,354	—	15	—	5	—	11	—	—	—	
Newark, N. J.	408,804	134	21	2	111	—	10	—	31	17	
New Orleans, La.	371,747	—	22	—	24	—	1	—	25	29	
San Francisco, Cal.	463,516	135	21	1	35	—	9	—	28	10	
From 200,000 to 300,000 inhabitants:											
Columbus, Ohio.	214,878	70	2	—	4	—	19	—	9	4	
Denver, Colo.	260,800	63	6	—	13	—	11	—	—	10	
Indianapolis, Ind.	271,708	—	37	—	11	—	40	—	14	—	
Kansas City, Mo.	267,877	—	5	—	18	—	11	—	2	5	
Louisville, Ky.	238,910	108	10	—	8	—	11	—	8	9	
Portland, Oreg.	205,463	50	2	—	6	—	9	—	10	8	
Providence, R. I.	254,960	62	13	—	23	—	9	—	—	5	
Rochester, N. Y.	256,417	80	5	1	17	—	11	1	6	6	
From 100,000 to 200,000 inhabitants:											
Atlanta, Ga.	190,558	—	2	—	8	—	2	—	2	13	
Birmingham, Ala.	181,762	73	—	—	124	2	14	—	10	7	
Bridgeport, Conn.	121,579	36	9	1	3	—	1	—	5	5	
Cambridge, Mass.	112,381	32	6	—	16	—	4	—	1	10	
Camden, N. J.	106,233	—	12	—	40	—	1	—	6	—	
Dayton, Ohio.	127,224	52	4	1	7	—	4	—	3	2	
Des Moines, Iowa.	101,538	1	4	—	1	—	6	—	—	—	
Fall River, Mass.	128,366	37	3	2	1	—	3	—	4	4	
Fort Worth, Tex.	104,562	52	1	—	34	1	4	—	—	5	
Grand Rapids, Mich.	128,291	36	7	3	2	—	4	—	4	—	
Lawrence, Mass.	100,560	34	3	—	—	—	—	—	10	3	
Lowell, Mass.	113,245	31	17	1	5	—	2	—	6	1	
Lynn, Mass.	102,425	22	—	1	—	—	—	—	—	3	
Memphis, Tenn.	148,995	54	5	—	93	—	3	1	4	3	
Nashville, Tenn.	117,057	43	4	1	6	—	2	—	1	3	
New Bedford, Mass.	118,158	40	1	—	11	—	1	—	17	5	
New Haven, Conn.	149,685	—	4	—	2	—	3	—	2	4	
Oakland, Cal.	158,604	49	1	—	3	—	4	—	6	5	
Omaha, Nebr.	165,470	51	5	—	18	—	4	—	—	3	
Reading, Pa.	109,381	20	4	—	—	—	3	—	2	1	
Salt Lake City, Utah.	117,399	34	—	—	79	—	9	—	—	—	
Springfield, Mass.	105,942	37	2	1	10	—	10	1	5	6	
Syracuse, N. Y.	155,624	57	11	3	30	2	7	—	3	3	
Toledo, Ohio.	191,554	53	11	—	4	—	1	—	—	7	
Trenton, N. J.	111,593	45	16	2	4	—	3	—	9	3	
Worcester, Mass.	163,314	46	6	—	8	—	2	—	7	5	



# DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS— Continued.

## City Reports for Week Ended Dec. 22, 1917—Continued.

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
From 50,000 to 100,000 inhabit- ants:										
Altoona, Pa.	58,659									
Atlantic City, N. J.	57,600		1		1				2	
Augusta, Ga.	50,245	11			4		2			
Bayonne, N. J.	69,893		1		2		2		2	
Berkeley, Cal.	57,653	7	1		3				1	
Binghamton, N. Y.	53,973	21	4		6		1		1	
Brookton, Mass.	67,449	13	3		2		4		1	
Canton, Ohio.	60,832	15	3				4		3	
Charleston, S. C.	60,734	37	1		1					1
Chattanooga, Tenn.	60,075				13		3		2	2
Covington, Ky.	57,144	19	3				1		2	
Duluth, Minn.	94,495	25	1		4		10	1		1
El Paso, Tex.	63,705	32	3							15
Erie, Pa.	75,195		6		1		1		3	32
Evansville, Ind.	76,078	19	3		1		2			2
Flint, Mich.	54,772	12	4				11			
Fort Wayne, Ind.	76,183	15	3				1			
Harrisburg, Pa.	72,015	24	4	3			5		2	
Hoboken, N. J.	77,214	33	2		29	1	1			1
Johnstown, Pa.	68,529	27	4	1	1		5		1	
Kansas City, Kans.	99,437		2		5		11		3	
Lancaster, Pa.	50,853				1		2			
Little Rock, Ark.	37,343	25	1		57		3			9
Malden, Mass.	51,155	17	1	1	1				2	1
Manchester, N. H.	78,283	23	1				1		1	
Mobile, Ala.	58,221	25	1		5					3
Norfolk, Va.	89,612		4	2	12		2		1	
Oklahoma City, Okla.	92,943	22	1		3		1			2
Passaic, N. J.	71,744	17	6						3	
Pawtucket, R. I.	59,411	23			1		2			1
Rockford, Ill.	55,185	20								4
Sacramento, Cal.	66,895	35	2	1			7		4	2
Saginaw, Mich.	55,642	17	4				1			2
St. Joseph, Mo.	85,236	30	9	1	1				1	
San Diego, Cal.	53,330	25	3		24		3		15	5
Savannah, Ga.	68,805	39			8		2		1	
Schenectady, N. Y.	99,519	22	6		4		3		3	1
Sioux City, Iowa.	57,078						9			
Somerville, Mass.	87,039	21	5	1	29	1			3	6
South Bend, Ind.	68,946	18			1		5			2
Springfield, Ill.	61,120	10	1							1
Terre Haute, Ind.	66,083	21	3						1	
Troy, N. Y.	77,916						2		2	
Wichita, Kans.	70,722		2				4			
Wilkes-Barre, Pa.	76,776	20	6	1	3		2		3	1
Wilmington, Del.	94,265	33	3	1	1		5			4
York, Pa.	61,656		1				2		1	
From 25,000 to 50,000 inhabit- ants:										
Alameda, Cal.	27,732		5		1		1			
Austin, Tex.	34,814	15			2					2
Brookline, Mass.	32,730	11			3		5			
Butler, Pa.	27,632	9	3		8		2			
Butte, Mont.	43,425		2		2		15			
Charlotte, N. C.	39,823		1		8		1		2	
Chelsea, Mass.	46,192	12	4		6				5	
Chicopee, Mass.	29,319	9			9		1		2	1
Columbia, S. C.	34,611		1		17				1	
Cumberland, Md.	26,074	6	5	1					2	2
Danville, Ill.	32,261	15	1		2				1	1
Davenport, Iowa.	48,811		2		2		4			
Dubuque, Iowa.	39,873		1		3		1			1
East Chicago, Ind.	28,743	8	1		4		1			
East Orange, N. J.	42,458				28		1			
Elgin, Ill.	28,203	4			1					
Everett, Mass.	39,233	15	5	1	6		3		1	1
Fitchburg, Mass.	41,781	8	1						2	1
Galveston, Tex.	41,863	1			1		1		1	
Green Bay, Wis.	29,353	7	1		1					
Haverhill, Mass.	48,477	14	6		2		4		7	1

# DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS— Continued.

City Reports for Week Ended Dec. 22, 1917—Continued.

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
From 25,000 to 50,000 inhabit- ants—Continued.										
Jackson, Mich.	35,363	23	2		1		12	1	1	
Kalamazoo, Mich.	48,886	21	2		27	1			1	
Kenosha, Wis.	31,576	4	13				16		1	
Knoxville, Tenn.	38,676		1		1		4			
La Crosse, Wis.	31,677	6	3				1		1	
Lexington, Ky.	41,037	20			22					2
Lima, Ohio.	35,384	11	3				1			3
Lincoln, Neb.	46,515	14	2	1	12		7		2	
Lorain, Ohio.	36,964		1				1			
Lynchburg, Va.	32,940	11							1	2
Medford, Mass.	26,234	8			3		3			1
Montclair, N. J.	26,318	4			7		1		1	
Montgomery, Ala.	43,285	14			21		5			2
Newburgh, N. Y.	29,603	12			65				3	3
New Castle, Pa.	41,133						2		1	
Newport, Ky.	31,927	10							3	3
Newport, R. I.	30,108	7	2				2			
Newton, Mass.	43,715	18	5	2	4					1
Niagara Falls, N. Y.	37,353	14	1		1		2		4	
Norristown, Pa.	31,401		1		2			1		1
Ogden, Utah.	31,404	3	2				7			
Orange, N. J.	33,080	8	6		2					1
Pasadena, Cal.	46,450	11							2	1
Perth Amboy, N. J.	41,185		3		21		1		2	1
Petersburg, Va.	25,582	21			5		1			1
Pittsfield, Mass.	38,629						4	2	1	
Portsmouth, Va.	39,651	19					3			2
Quincy, Mass.	38,136		3		1				1	
Racine, Wis.	46,486	14		2						
Roanoke, Va.	43,284	11	4		3					2
Rock Island, Ill.	28,926	8								
San Jose, Cal.	38,902		1		7				1	
Steubenville, Ohio.	27,445	12							1	
Superior, Wis.	46,226	6			1		3			1
Taunton, Mass.	36,283	16					1		1	1
Waltham, Mass.	30,570	13	3		2				1	1
Watertown, N. Y.	29,804								3	
West Hoboken, N. J.	43,139	13	3		2		1			2
Wheeling, W. Va.	43,377	17	1						1	
Wilmington, N. C.	29,802	13			7					
Winston-Salem, N. C.	31,155	19			26		1		2	
Zanesville, Ohio.	30,863	16								2
From 10,000 to 25,000 inhabit- ants:										
Alexandria, La.	15,333	6			46					
Alton, Ill.	22,874	5	2	1			1			
Ann Arbor, Mich.	15,010	5	3		1		1			
Braddock, Pa.	21,085		4		2					
Calro, Ill.	15,794	7								1
Chillicothe, Ohio.	15,470		1		19		8			
Clinton, Mass.	13,075	4								
Coffeyville, Kans.	17,548				7				2	1
Concord, N. H.	22,660	10								1
Galesburg, Ill.	24,276	9	3		3					
Greenville, S. C.	18,181	5	1		10					
Harrison, N. J.	16,910		1		2					
Hattiesburg, Miss.	16,482				9					
Kearny, N. J.	23,539	6			42					
Kokomo, Ind.	20,930	9								
Leavenworth, Kans.	19,363	13	3							
Manitowish, Wis.	14,610	6								2
Meir se, Mass.	17,445	6	2				1		1	
Morristown, N. J.	13,284	7							1	
Muscataine, Iowa.	17,500	1								
Nanticoke, Pa.	23,126	1	4		1				1	
New Albany, Ind.	23,629	6			1		2			
Newburyport, Mass.	15,243	3								

\* Population Apr. 15, 1910; no estimate made.

# **DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—** Continued.

**City Reports for Week Ended Dec. 22, 1917—Continued.**

City.	Popula- tion as of July 1, 1916 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuber- culosis.		
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
From 10,000 to 25,000 inhabit- ants—Continued.											
New London, Conn.	20,985	7	1							2	
North Adams, Mass.	22,019	7	1								1
Northampton, Mass.	19,926	9	1		1		3		4		2
North Little Rock, Ark.	14,907				3				1		
Plainfield, N. J.	23,805	8						1			
Pontiac, Mich.	17,524	12	15	2	2		5		2		
Portsmouth, N. H.	11,666						4				
Rocky Mount, N. C.	12,067	3			1						
Rutland, Vt.	14,831	3									
Sandusky, Ohio.	20,193	11					1		1		1
Saratoga Springs, N. Y.	13,821	5									
Spartanburg, S. C.	21,365				2		1				1
Wilkinsburg, Pa.	23,228	10			3				1		
Woburn, Mass.	15,969	5									

\* Population Apr. 15, 1916; no estimate made.

## FOREIGN.

### BRITISH GOLD COAST.

#### Plague—Axim.

Plague was reported present, January 8, 1918, at Axim, British Gold Coast, West Africa.

#### MALTA.

#### Cerebrospinal Meningitis—1916.

The report of the medical officer of the department of health of the Maltese Islands for the year 1916-17 states that cerebrospinal meningitis was not recognized in Malta previous to the year 1916. The first reported outbreak occurred in March of that year. To the end of the year under report, March 31, 1917, 11 cases with 3 fatalities were notified. The cases occurred in persons living in unfavorable sanitary conditions. Some of the cases occurred in groups. In others no connection with known cases was ascertained.

#### Plague, Year 1917—Plague in Rats—Previous Outbreak, 1813-14.

Eight cases of plague were notified in the island of Malta from March 2 to April 2, 1917. Of these cases, 7 were bubonic in form; 1 case was septicemic. Five of the 8 cases notified occurred at Calcara among a group of laborers from the neighboring island of Gozo, living in two tenements; the remaining cases occurred in contacts with this group. Plague was ascertained to be present in rats.

The last previously reported outbreak of plague in Malta occurred in 1813-14, with a total of 4,668 fatal cases. The epidemic of 1813-14 developed in the city of Valetta.

### CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER.

#### Reports Received During Week Ended Jan. 11, 1918.<sup>1</sup>

#### CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
India:				
Bombay.....	Oct. 28-Nov. 3....	2	1	
Java:				
West Java.....	Oct. 26-Nov. 1....	5	3	Oct. 26-Nov. 1, 1917: Cases, 5; deaths, 3.
Batavia.....				

<sup>1</sup> From medical officers of the Public Health Service, American consuls, and other sources.

**CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued.****Reports Received During Week Ended Jan. 11, 1918—Continued****PLAGUE.**

Place.	Date.	Cases.	Deaths.	Remarks.
Ceylon:				
Colombo.....	Oct. 14-27.....	4	3	
India:				
Bombay.....	Oct. 28-Nov. 3.....	18	17	Oct. 21-27, 1917: Cases, 13,571; deaths, 9,390.
Karachi.....	Oct. 21-Nov. 10.....	6	5	
Madras Presidency.....	Oct. 31-Nov. 6.....	1,555	1,209	
Rangoon.....	Oct. 21-27.....	9	10	

**SMALLPOX.**

Algeria:				
Algiers.....	Nov. 1-30.....	1		
Australia:				
New South Wales.....				Nov. 20, 1917: Cases, 1.
Abermain.....	Nov. 20.....	1		
Canada:				
Quebec—				
Montreal.....	Dec. 16-22.....	1		
China:				
Pairen.....	Nov. 18-24.....	1		Cases, foreign; deaths among native population.
Shanghai.....	Nov. 19-25.....	2	12	
Egypt:				
Alexandria.....	Nov. 12-18.....	1		
France:				
Ly. n.....	Dec. 3-9.....	4		
India:				
Madras.....	Oct. 31-Nov. 6.....	4	1	
Italy:				
Turin.....	Nov. 12-25.....	44	10	
Java:				
Mid-Java.....	Oct. 17-23.....	7		Oct. 26-Nov. 1, 1917: Cases, 14; deaths, 7.
West Java.....				
Newfoundland:				
St. J. Is. ....	Dec. 15-21.....	2		
Philippine Islands:				
Manila.....	Oct. 28-Nov. 10.....	3		Variceloid.
Portugal:				
Lisbon.....	Nov. 4-10.....	1		
Russia:				
Petrograd.....	Aug. 31-Oct. 27.....	59	3	
Spain:				
Seville.....	Oct. 1-30.....		9	

**TYPHUS FEVER.**

Algeria:				
Algiers.....	Nov. 1-30.....	2		
Canada:				
Quebec—				
Montreal.....	Dec. 16-22.....	2	1	
Egypt:				
Alexandria.....	Nov. 12-25.....	23	5	
Greece:				
Saloniki.....	Nov. 11-24.....		19	
Japan:				
Nagasaki.....	Nov. 26-Dec. 2.....	1		
Java:				
Mid-Java.....				Oct. 17-23, 1917: Cases, 6; deaths, 1.
Samarang.....	Oct. 17-23.....	3		
West Java.....				Oct. 26-Nov. 1, 1917: Cases, 12; deaths, 2.
Batavia.....	Oct. 26-Nov. 1.....	8	2	
Mexico:				
Mexico City.....	Nov. 19-Dec. 15.....	243		
Russia:				
Petrograd.....	Aug. 31-Oct. 27.....	22		
Sweden:				
Goteborg.....	Nov. 18-24.....	1		
Tunisia:				
Tunis.....	Nov. 30-Dec. 6.....		1	



**CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued.****Reports Received from Dec. 29, 1917, to Jan. 4, 1918.<sup>1</sup>****CHOLERA.**

Place.	Date.	Cases.	Deaths.	Remarks.
India:				
Calcutta.....	Sept. 16-Oct. 6.....		42	
Java:				
West Java.....				
Batavia.....	Oct. 19-25.....	8	2	Oct. 19-25, 1917: Cases, 9; deaths, 2.
Persia:				
Mazanderan Province—				
Astrabad.....	July 31.....			Present.
Barfrush.....	July 1-27.....	34	23	
Chahmirzad.....				25 cases reported July 31, 1917.
Chahrastagh.....	June 15-July 25.....	19	8	
Kharek.....	May 28-June 11.....	21	13	
Sari.....	July 3-29.....	273	144	
Yekchambe-Bazar.....	June 3.....	6		
Siam:				
Bangkok.....	Sept. 16-22.....	1	1	

**PLAGUE.**

British Gold Coast:				
Aklm.....	Jan 8.....			Present.
Egypt:				
Port Said.....	July 23-29.....	1	2	Jan. 1-Nov. 15, 1917: Cases, 728; deaths, 398.
India:				
Calcutta.....	Sept. 16-29.....		2	Sept. 16-29, 1917: Cases, 18,633; deaths, 13,810.
Siam:				
Bangkok.....	Sept. 16-22.....	1	1	
Straits Settlements:				
Singapore.....	Oct. 28-Nov. 3.....	1	3	

**SMALLPOX.**

Australia:				
New South Wales.....				Oct. 12-25, 1917: Cases, 5.
Abermain.....	Oct. 25.....	2		
Warren.....	Oct. 12-13.....	3		
Brazil:				
Pernambuco.....	Nov. 1-15.....	1		
Rio de Janeiro.....	Sept. 30-Oct. 27.....	313	88	
Canada:				
Ontario—				
Hamilton.....	Dec. 16-22.....	1		
Sarnia.....	Dec. 9-15.....	1		
China:				
Amoy.....	Oct. 22-Nov. 4.....			Present.
Mukden.....	Nov. 11-24.....			Do.
Tientsin.....	Nov. 11-17.....	2		
Egypt:				
Cairo.....	July 23-29.....	2	1	
France:				
Lyon.....	Nov. 18-25.....		1	In hospital. From Givors.
Great Britain:				
Birmingham.....	Nov. 11-17.....	19		
Italy:				
Turin.....	Oct. 29-Nov. 4.....	33	6	
Java:				
Mid-Java.....	Oct. 10-16.....	8		
West Java.....				Oct. 19-25, 1917: Cases, 8; deaths, 1.
Mexico:				
Mazatlan.....	Dec. 5-11.....		1	
Mexico City.....	Nov. 11-17.....	9		
Newfoundland:				
St. Johns.....	Dec. 8-14.....	10		
Portuguese East Africa:				
Lourenco Marques.....	Aug. 1-Sept. 30.....		4	
Russia:				
Moscow.....	Aug. 26-Oct. 6.....	22	2	

<sup>1</sup> From medical officers of the Public Health Service, American consuls, and other sources. For reports received from June 30, 1917, to Dec. 28, 1917, see Public Health Reports for Dec. 28, 1917. The tables of epidemic diseases are terminated semiannually and new tables begun.

**CHOLERA, PLAGUE, SMALLPOX, AND TYPHUS FEVER—Continued.****Reports Received from Dec. 29, 1917, to Jan. 4, 1918.****TYPHUS FEVER.**

Place.	Date.	Cases.	Deaths.	Remarks
Australia:				
South Australia.....	.....	.....	.....	Nov. 11-17, 1917: Cases, 1.
Canada:				
Ontario—				
Kingston.....	Dec. 2-8.....	3	.....	
Egypt:				
Alexandria.....	Nov. 8-14.....	10	2	
Cairo.....	July 23-29.....	23	8	
Java:				
Mid-Java.....	Oct. 10-16.....	12	.....	Oct. 19-25, 1917: Cases, 9; deaths, 2.
West Java.....	.....	.....	.....	
Batavia.....	Oct. 18-25.....	5	1	
Mexico:				
Aguascalientes.....	Dec. 15.....	.....	2	
Mexico City.....	Nov. 11-17.....	94	.....	
Russia:				
Arhangel.....	Sept. 1-14.....	7	2	
Moscow.....	Aug. 26-Oct. 6....	49	2	